

Application Serial No: 10/037,808  
In reply to Office Action of 05 May 2004

Attorney Docket No. 79530

AMENDMENTS TO THE CLAIMS

1. (currently amended) A semi-fuel cell stack comprising:

a housing;

an anode and a porous cathode in said housing;

an aqueous catholyte stream of hydrogen peroxide flowing  
within said housing;

an aqueous anolyte stream flowing in said housing; and

a membrane which allows selective ion transfer of OH<sup>-</sup> ions  
through said membrane and into the anolyte stream and  
which inhibits transfer of hydrogen peroxide through  
said membrane means for preventing migration of said  
catholyte through the porous cathode and into the  
anolyte stream.

2. (currently amended) A semi-fuel cell stack according to  
claim 1 wherein said ~~migration preventing means~~ membrane is in  
contact with said porous cathode.

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3. (currently amended) A semi-fuel cell stack according to claim 2 wherein said ~~migration preventing means comprises a material covering membrane covers~~ a surface of said porous cathode.

4. (currently amended) A semi-fuel cell stack according to claim 2 wherein said membrane is impregnated into said porous cathode.

5. (canceled).

6. (original) A semi-fuel cell stack according to claim 1 wherein said cathode comprises a catalyzed material.

7. (original) A semi-fuel cell stack according to claim 1 wherein said cathode comprise a carbon fiber matrix catalyzed with at least one of palladium and iridium.

8. (original) A semi-fuel cell stack according to claim 1 further comprising means for creating a plurality of flow channels for said catholyte attached to said anode.

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9. (original) A semi-fuel cell stack according to claim 8  
wherein said flow channel creating means is formed from an  
electrically non-conductive material.

10. (original) A semi-fuel cell stack according to claim 1  
wherein said anolyte stream comprises a NaOH/seawater  
electrolyte stream.

11. (canceled).

12. (original) A semi-fuel cell stack according to claim 1  
wherein said anode is formed from an aluminum containing  
material.

13. (original) A semi-fuel cell stack according to claim 1  
wherein said catholyte comprises an aqueous sodium hypochlorite  
solution.

14. (original) A semi-fuel cell stack according to claim 1  
further comprising:

at least two anodes within said housing;

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at least two porous cathodes within said housing;

means attached to each of said anodes for creating a plurality of flow channels for said catholyte;

means attached to a surface of each of said porous cathodes for preventing migration of said catholyte through each said cathode; and

a plurality of anolyte flow streams within said housing with each of said streams flowing between a surface of one of said anodes and a surface of said migration preventing means.

15. (original) A semi-fuel cell stack according to claim 14

wherein:

each of said anodes is formed from an aluminum containing material;

each of said porous cathodes is formed from a porous material which has been catalyzed with at least one of palladium and iridium;

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said anolyte comprises an aqueous seawater/NaOH solution;

said catholyte comprises an aqueous hydrogen peroxide solution; and

said migration preventing means comprises a membrane for allowing a flow of OH<sup>-</sup> ions through the membrane into said anolyte stream while inhibiting the transfer of hydrogen peroxide through the membrane.

16. (currently amended) A method for operating a semi-fuel cell stack comprising the steps of:

providing a housing having at least one anode and at least one porous cathode;

flowing a catholyte stream into contact with said at least one porous cathode through at least one catholyte channel;

flowing an anolyte stream into contact with said at least one anode through at least one anolyte channel; and

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providing each said cathode with a membrane which allows OH<sup>-</sup> ions to pass through said membrane while inhibiting a flow of hydrogen peroxide through said membrane thereby preventing migration of said catholyte through the porous cathode and into contact between each respective the anolyte stream and each respective catholyte stream.

17. (currently amended) A method according to claim 16 wherein:

    said catholyte flowing step comprises flowing at least one stream of an aqueous hydrogen peroxide solution into contact with said at least one porous cathode; and

    said anolyte flowing step comprises flowing at least one stream of a NaOH/seawater anolyte into contact with said at least one cathode. and

said preventing step comprises providing each said cathode with a membrane which allows OH<sup>-</sup> ions to pass through said membrane while inhibiting a flow of hydrogen peroxide through said membrane.

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18. (original) A method according to claim 17 wherein said catholyte flowing step comprises flowing said hydrogen peroxide solution at a hydraulic pressure greater than the pressure of the NaOH/seawater anolyte.

19. (canceled).